



SMOKE ABATEMENT.

By SIR WM. B. RICHMOND, K.C.B., R.A., D.C.L. [H.A.].

Read before the Royal Institute of British Architects, Monday, 17th May 1909.

MR. PRESIDENT AND MEMBERS OF THE INSTITUTE,—

I AM gratified that you have asked me to read a Paper upon the smoke question, because I feel convinced that a powerful body as ours is can not only do much to convince public opinion upon this important question, but that it could exercise influence upon all governing bodies which require to be pushed to act and to find means to alleviate, if not entirely dismiss, a nuisance, an unenlightened condition of affairs which is detrimental not only to health but to all kinds of property, and even to commerce. It is unnecessary for me to tell you what you all know as well as I do, namely, that smoke and the products, acids, &c., are detrimental to buildings as well as to all hard or delicate surfaces upon which they are deposited.

From the purely æsthetic side of the question there can be no doubt, namely, that a deposit of black upon surfaces which are intended by their designers to appear white contradicts the common sense of all of our designs. White shadows and black faces constitute an absurdity even to the tiro, and how much more galling must it be to you when you see your elaborate mouldings and ornaments screaming an ugly lie. It appears to me to be sentimental rubbish which even for one moment defends the colour of that portion of the west front of St. Paul's which has been made a black and unintelligible mass, wholly contradicting Wren's scheme. Gloom is certainly not dignity, nor does dirt and blackness constitute nobility of aspect or add to any historical memories, save those which a firm Legislature ought long ago to have tackled. The black condition of the outsides of so many of our public buildings and priceless works of art in architecture is not a thing to be proud of, but rather to be ashamed of, as evidencing the inertness of public opinion and the insensitive attitude of governing and public bodies which have continued and do continue to delay not only to legislate firmly, but to see that their legislation is put in action. Until we have cleaned London from the smoke of factories which do come under the Act it is useless to attempt to tackle the domestic chimneys.

What we have to do is to frame the clause in the Public Health Act in such a way that prosecution may be made easy and not difficult, and that could be done by the elimination of the word "black" from the clause, and substituting instead "all or any." The London County Council has had this change of wording before it for some little time, accepting a deputation from the Coal Smoke Abatement Society which was listened to with marked attention. I believe that if this Institute would frame and pass a resolution in accordance with the proposed change in the wording of the clause and send it to the Parliamentary Committee of the L.C.C. the Councillors on that Committee would be strongly influenced to pass the revision suggested. Continued expression of public opinion, especially that which is in embodiment hammering at it,

is the only way to persuade public bodies to act firmly and promptly. The Local Government Board is steadily remiss in sustaining or supporting the execution of Acts of Parliament in their relations to this Act; the present Minister we hoped to find our friend, but on the contrary all his promises before he got into power are not worth the breath with which they were uttered or the ink with which they were penned.

The sustained force of public opinion is the only remedy for Government official apathy and dilatoriness; there is nothing the Government official dislikes more than being prominently shown up in the Press—and it is excellent medicine for him. There is no doubt that public opinion is roused against the monstrosity of London dirt, and, slow as it is, except where pure commercialism is involved, the unthinking public begins to see that smoke meaning waste, and dirt meaning expense, should be, as far as possible, made an unnecessary evil.

One is bound to fear that on a question of aesthetics the abolition of smoke would take a long time to effect, but once prove to the purely commercial man that his pockets are lighter for it and he will immediately change the tone of his argument. The cost in hard cash to every individual in London arising from dirt caused by smoke and smoke alone is prodigious; the destruction resulting from it is terrible. Even what appear to be hermetically sealed cases fail to keep it out.

Many a time have I glazed, and as I thought finally pasted in the glass in a frame, pasted the backing board and imagined that I had conquered the invasion, when to my disgust, perhaps only a few months after the operation has been completed, I have found the inside of the glass blackened with fine soot powder and the drawing irreparably damaged. To all pictures soot is a deadly enemy even when dry; the deposit left by one black is an essential oil so powerful in its corrosive elements that a solvent to remove the stain, however slight, would have to be so strong that it would destroy the varnish and paint as well. This fact was told to my father by Faraday during the sitting of a Royal Commission when the removal of the pictures in the National Gallery to South Kensington was in contemplation; I think the Commission sat in 1860, since which time we know that South Kensington has become almost as deeply clouded by dirt and smoke as Trafalgar Square, and there, in South Kensington, are treasures for which the Government has paid hard cash still unprotected by a little manly legislation—legislation which would not injure but benefit all classes, including the manufacturer-offenders, because all smoke is waste fuel.

One of the greatest fallacies is, surely, that stringent laws concerning cleanliness may damage trades. There is only one class which benefits by our smoke, the class of the washer- and char-woman; every other trade or occupation is injured, even the very vested interests of the ultra-commercial, because dirt obliges extra labour, and extra labour is expensive. The gas companies might suffer, but what are these among so many? One of the ridiculous travesties of common sense is the fact that the electric light stations in London have been, and some of them are still, the chief offenders, creating darkness to produce light! The tram electric stations also are terrible producers of black smoke. From one in this neighbourhood I have seen the smoke travel on the atmosphere for at least a mile; in fact, Bedford Park, a rural district, is severely injured by this plague and selfishness on the part of the company. The Local Government Board declines to take action, though by law it is commanded to do so in default of the district authorities. Why is this? What is at the bottom of it? Votes! perchance; or vested interests; anyway it is disgraceful! The alteration I have already referred to in the wording of the Act would render it easy for magistrates to convict. Under its present reading it is difficult to prove that black smoke exists at all. Whether or no it looks black depends on the tone and colour of the sky, and on its position in relation to the sun at various times of the day. I do not like to venture to state the number of buckets of black

water removed from my mosaics and windows in St. Paul's, nor the quantity of black sediment left at the bottom of the pails after the water had lain still awhile ; it was astonishing, and aggravating. Now, if this smoke is a nuisance—and as to that there can be no doubt whatever, and that in a large measure it can be removed—it is in the region of a national question, and a far more important one than many Acts of Parliament which only waste the time of the House, and are only such as may possibly, if ever enforced, do some good to certain sections. This is a question which concerns everybody, touches everybody more or less, the poor as well as the rich ; for the poor it makes it impossible for their houses to be clean, it makes it impossible for them to grow vegetables in their gardens, it injures their health, because smoke precludes the admission through it of the most health-giving violet rays ; the darkness leads to depression, and depression to drink. It is harmful to every building : stone, marble, iron, steel, copper, bronze, even gold is injured by it. Precious fabrics must be kept under glass, and even then they are not immune from damage ; it destroys in time the surface of oil pictures ; it has injured, and still goes on injuring, the precious marbles in the British Museum and South Kensington. The sulphuric acid contained in each smut is a poison of great strength ; it will rot copper wire in time ; cords, string even of strong hemp, are eaten into, and many is the picture which has fallen from a wall owing to the rotting of copper wires or cords through the action upon them of sulphuric acid.

All the things I have mentioned are known to you ; it is no news that is told, it is just a reminder, as it were, in a swift-going period, with many important enterprises in the forefront, especially coming to architects, a section of the artistic community the most hampered and shackled by what is called civilisation, which in reality is obstructive to good and noble art, being nothing but commercialism gone mad because agriculture has been wrested from us by machinery. Just a reminder ! that you, as all of us are prone to do, may sometimes want water and forget the bucket. You want your buildings to remain as you have designed them, and perchance are apt to forget the cause, because it takes a good deal of coalition, and a still greater persistence of drumming and worrying, to make any Government, especially the English, attend to needs which do not immediately belong to party politics and to seat-saving or seat-getting. If the smoke nuisance were made such a popular cry that it became necessary for any "party" to take it up to get in, we should very soon have the deed done ; but when we learn, as we are learning, the hopeless muddles concerning the very existence of England as a country while amateurs in essential matters rule, how can it be wondered at that a great problem such as the smoke nuisance is has come to be regarded as a superficial nomenity ?

We are taught by proof that nothing will move any Government in their snug places in Parliament or officials in their offices but a regular bombardment of public opinion ; when that is roused, officials become human, and are forced unwillingly to see that the old red tape is rotten and that new must be provided ; when in its time this also becomes rotten, then must begin again the gyrations of the old wheel of pressure. One thing must always be mistrusted, the promises of those who are either in office or out of office or going to get office. A Government must be worried while it is in power, and that can only be done by the weight of public opinion.

All and every harm to health, to the joyousness of life, to the preservation of property public and private, to energies, and to the higher cultivation of the sense of the value of both nature and art, and above all the essential of every stream of light obtainable in this overgrown and artificial city, has been stated over and over again. Statistics upon every branch of the subject are ready to hand, and the most unimaginative Englishman can follow statistics if nothing else. Therefore what is wanted is the gathering together of statistics which shall show how in various departments of art, industry, health, even morals, this nuisance of smoke is detrimental to the country at large. It will be resisted by monopolists, of course, and by the

self-interested classes; it might become a cry of interference with manufacture and labour; but that plea can very easily be broken down. It is an old excuse and one we know of perfectly well, but it is one which, by educating the masses to see for themselves, will very soon find its proper level in the region of untruth.

Before we begin to make an attack on household smoke, let us set the law in motion as it now stands and use all our endeavours, public and private; yet it will be well to bear in mind that there are both grates and fuel which are practically smokeless. It is not to be expected that we should adopt the German stove heating system in our houses—that I, for one, hope will never come. The open fire is a grand institution, and there is no goddess of Olympus more snug, more given to good fellowship than Hestia; still, for general heating of a modern detached house, has the holocaust no recommendations? Gentle, diffused warmth, reaching, say, from 58° to 60° over the entire house, would indeed add to comfort, and probably also to health; then the open fire would be just a great luxury, and wood might be used for it in place of coal. I suppose afforestation is a coming thing, anyhow it ought to be; in that case ere long wood should be cheap. And, compared with coal, how infinitely more pleasant is the heat wood promotes, and how absolutely innoxious its gas is, as well as its ash. I wish, and I am by no means alone in wishing, that the poorer classes would combine in tenements, even in streets, and have one cookery place in a given area; and, further, that all workmen's houses or rows of houses were provided with heat as they are now provided with gas or even electric light. All these items in time, if tried now in some district or districts, might become customary. Then we should have begun at the right end for the diminution of smoke from private dwellings. It is no use to legislate till something has been offered which is equally pleasant as the open fire; but even this latter might come to be regarded more as a luxury than a necessity if some system of combination or system of general heating were devised and promoted.

To bring my remarks up to a point, leaving out all other points than the law as it stands, I would suggest that the Institute should draw up a memorandum to the London County Council, get it signed by every member, praying that in the clause in the Public Health Act of 1891 relating to smoke the word "black" shall be omitted, or shall have inserted after it the words "and all other smoke." This change of a word or short part of a sentence would enable magistrates to know where they are with the law. Plaintiffs would then only have to prove a nuisance, and not have to prove its colour—an almost impossible thing to do.

DISCUSSION OF SIR WM. RICHMOND'S PAPER.

The President, Mr. ERNEST GEORGE, in the Chair.

Mr. H. A. DES VŒUX, M.D., Hon. Treasurer Coal-smoke Abatement Society: I have much pleasure in seconding the proposition of Sir William Richmond and moving a vote of thanks to him. It was his letter in *The Times* some ten years ago that started the Coal-smoke Abatement Society in London, and it has been a very uphill battle we have had to fight. We have had to fight two very great obstructions, the obstruction of the monopolists and those interested in opposing us, and also even a greater obstacle—the obstacle of indifference. It is this indifference which has struck me more than the opposition of those who are interested. When I began to fight I thought that every dweller in

town would be interested in fighting the smoke fiend. But it is astonishing what little interest is taken in it. Everyone complains of it in the winter, but when we get to April and May people forget all about it. The fight, however, has to be kept up all the year round. Last year I had an opportunity of seeing a fog created in the middle of June. I was high up in a house in Maida Vale, where one can get a view over a great part of London, and in the distance, rather below me, I could see hundreds of small houses all emitting a yellow brownish smoke, and above the houses, at a little distance from each other, two enormous black clouds were forming. It was a hot, muggy, slightly rainy day, and these

clouds joined together in the shape of a "V." I watched them forming, and then went home. By the time I was back in Westminster the familiar smoke fog of London had formed, and absolutely shut out all daylight. I had to turn on the electric light in my house and pull down the blinds. Now that fog could not have been formed by factories of any sort, for there were no factory chimneys in view—only the chimneys of hundreds of small houses smoking from the fires cooking the midday dinner. This was sufficient to cause a fog black enough to plunge Westminster into darkness. It is no use moving against manufacturers if the kitchen chimney is to go scot-free. I am certain in my own mind—and here I differ from Sir William—that there is as much smoke created from the kitchen chimneys as from all the factory chimneys put together. Our hot dinners, especially in private houses, are produced at the cost of injury, not only to our next-door neighbour, but to distant neighbours, for it is well known that smoke will travel at least thirty, forty, and sometimes fifty miles before it drops. If the Institute of Architects were to take up this one question of cooking in private houses, an enormous amount of good would be done. It is perfectly easy to cook smokelessly, and the food is as well cooked by gas as by coal. The School of Cookery tells me that some kinds of cookery are much better performed by gas than by any other fuel; and from practical experience in my own house I can affirm that gas-cooking is as good as any other. I have often had dining at my own table people who told me they would never eat a meal cooked by gas, as they could always taste the gas in the food. When after dinner I have informed them that what they had just eaten was gas-cooked they have declined to believe me, insisting that if it had been they should have tasted the gas. It is, however, an absurdity to say that the gas could be tasted. I eat gas-cooked food every day of my life, and I am certain it is not true. Architects in the houses they build could bring to bear an enormous influence, and if they would aim at that one matter of cooking by gas an improvement would be very soon noticeable in London. If you begin by gas in the kitchen, I am certain you will soon follow with gas upstairs. People, I know, hold different views on that point, and I am not going to labour it; but I believe myself that gas for heating a house, especially for bedrooms, has an advantage which is hardly yet thoroughly appreciated by those in authority. There are at least 500,000 gas stoves in use in London, and if gas were as deleterious to health as has been said, I think we should have heard more about it by this time. Turning from that question, I should like to refer to the action which the County Council is taking at the present time. I think the Institute could help us enormously. We have approached the County Council to get the law changed, and the Public Control Committee of the Council has recommended

that the word "black," in the clause in question in the Public Health Act, should be removed. We call a smut black, but there is very little smoke that is absolutely black. The Public Control Committee also recommend that the words "all chimneys," which at present only refers to factory chimneys, should include all places in which the process of manufacture is carried on, and the chimneys of any building or place where furnaces are in use. Those companies who carry on operations under statutory powers have raised great objections to the Smoke Abatement Acts; for instance, the Central London Railway, when summoned for issuing smoke, pleaded that they could not run trains without creating smoke. They were fined very heavily, and they appealed to the High Court. Fortunately for us they met with a very unsympathetic reception there; the High Court told them they should have thought of that before they got the Act of Parliament passed. They had to stop the smoke, and I am glad to say that they have reduced their coal consumption from 1,100 tons per week to 600 per week, although they run more trains. I do not think they can grumble at our action. The County Council also want to bring under the Act the chimney of any Government factory or workshop. That is very important, for the Government have enormous factories at Woolwich and thereabouts, and when the wind is blowing from that direction the smoke from those chimneys blows over London and does a great amount of harm. There is no reason why the Government factories should be exempt from the law. Another recommendation of the Public Control Committee is that in certain cases the Council should be allowed to act either in conjunction with or at the request of or in agreement with any sanitary authority. London is divided up into about thirty sanitary authorities, and some of these—notably the City of Westminster—carry out this Act of Parliament very well; but some do it very badly, some do it only by compulsion, and some do not do it at all. The County Council want power to act when other authorities are either afraid of the expense, or afraid of the manufacturers in the district, or else refuse to do it at all. It would be a great thing if they had the power, because the London County Council are our very best friends in London. Then the Council want to have the power to act where the smoke comes from electrical or other industrial works, or from premises used for the treatment or disposal of refuse or for disinfecting purposes. They really want to take action where the buildings of a local authority emit smoke. A local authority is divided up into different committees—the Baths and Wash-houses Committee, the Electricity Committee, and others—and some of the buildings under their control emit smoke. Apparently it is impossible, in the present state of the law, for one committee of a Borough Council to prosecute another committee; so that if the Electricity Committee has electric light-

ing works which emit an enormous amount of smoke, the Public Health Committee of the same authority cannot prosecute. The result is that the only electricity works emitting smoke in London are those belonging to Borough Councils, because where they belong to a company the Borough Council prosecute the offenders. But where the works are owned by the Borough Council they cannot be prosecuted by themselves. Further, it is necessary that the County Council should have power to take action outside its own district. There is one very notorious district outside the London County Council—the district of West Ham—which contains an enormous number of factories, all of which emit smoke. There is practically not a factory in West Ham which has not been reported to the Coal-smoke Abatement Society as creating a smoke nuisance almost every hour in every day of the week. The Corporation of West Ham is about the only corporation in or about London which has never taken any action whatever. We have reported to the Local Government Board somewhere about 2,000, if not more, nuisances from West Ham alone, and the Local Government Board have taken no action at all. Now the County Council are very anxious, with a Corporation like West Ham, which is always in default, that they should have power to act in spite of them. This has been recommended by the London County Council, and this is another case where the Institute could help us a great deal. The matter has now been referred to the Finance Committee. If you know as much about these local affairs as I do, you know that sometimes Finance Committees will spend enormously, and sometimes they are penurious to a shilling. The Finance Committee of the London County Council have made a report upon it. They say they do not like to act upon it, because they do not know to what expense it is likely to lead. But the expense of smoke to London in its injury to art and other things is at least £5,000,000 a year. The cost of a few prosecutions cannot be more than £1,000 a year, and for the London County Council to shy and jib at a trifling expense of that kind seems to me penuriousness that ought not to be allowed. If the Institute would bring its influence to bear to show that corporate bodies outside were watching them it might be of advantage. We, the Coal-smoke Abatement Society, a poor feeble Society—though perhaps a rather pugnacious one—are the only people at present who have moved at all, and I am sure if you would help us a great deal can be done to settle this question which is now in the balance. Any movement on your part to show that you recognised that the London County Council were doing their duty would be an advantage, and help them in what they would wish to do if they felt that they had London behind them.

Mr. PAUL WATERHOUSE, M.A.Oxon. [F.] : It is a great pleasure to me to be allowed to second

the vote of thanks to Sir William for his Paper. It is on a subject which it must be difficult to handle alluringly, but he has certainly made his Paper most attractive in form as well as most appealing in matter, and has delivered it in a tactful and graceful way. And we want to thank him for something more than this. Agitations are conducted, as a rule, not by people who live in the sublimer atmosphere of art; and I have often felt when I have seen his name in the forefront of this battle that we all, as artists, owe a special debt to him for—I will not say the dirty work—but I may say the smoky work—which he has undertaken on behalf of the community at large. I think that for a man of his distinction and occupation to step into the front rank of this very arduous and thankless job is a very great boon to us. Something has been said about indifference, and I think that goes home to all of us. Perhaps it would be right for us to analyse that indifference. I have thought it over, and it seems to me that possibly it is due in some measure to the fact that we are a long-suffering race. I do not mean the architects, but human beings. Most of us have been very well brought up, and we have been taught to recognise certain things as unavoidable and which must be endured. These fogs we are apt inertly to suppose come upon us as a sort of visitation of Heaven. We have been taught this evening that they do not; but I believe we most of us would no more think of asking for fog to be removed than we would ask the gardener to remove the North Wind, or than the Neapolitan would send for the police to stop the eruptions of Vesuvius. We take these things for granted. That is a great mistake, and I feel I have been stirred up to a state of dissatisfaction on the subject, which I hope is seething in all of us. As architects perhaps we have another excuse. One of the things which keep us bright and cheerful is that we are always contending with difficulties. We look upon it as part of our daily work to meet obstacles and not to get them removed. In all our work we find, I think, that the whole brunt of the business consists of dealing with obstacles, whether it is the site that is too small, or the client who will not pay enough, or that there is an ancient light controlling our elevation. It is with a kind of dismay that we learn that our client has bought an addition to the site, and has squared the neighbour opposite, and is going to spend £10,000 more. One of the difficulties in which we so innocently rejoice is the "dirt" difficulty; we know we have to contend with the soot. Most of us criticise our work by saying: "How is it going to look when dirty?" We have to rely upon form. Therefore it is a kind of virtue in us that we have had this subject in front of us as a difficulty to be met, and not as a difficulty to be removed. But now I think we may put all that on one side. I feel stirred up, and I thank Sir William and Mr. Des Vœux for that stirring up, and for helping us to see that we are putting up with some-

thing which we ought not to put up with. I feel heartily ready to join in adding a little push in the right direction with the County Council. I do not know that I can add anything. Discussion is out of the question. We none of us can feel that there is anything debatable on this subject. We are all now on one side about it, and if any of us have a lurking feeling that we want to stick to the old difficulties in our design, we none of us want to stick to the difficulties in a drawing office. Those who, like myself, do part of their work in the country and part in London realise the enormous difference between town and country in the mere matter of dirt on the drawing board : on that ground alone, even if we had no feelings on the larger issues, I feel quite sure we should be very glad to see fog and smoke and the smuts removed.

SIR ASTON WEBB, R.A. [F.] : It has been said that there seems to be no opening for discussion on this subject. We are all agreed on that, and I think we are also agreed on another point—viz., the debt we owe to Sir William Richmond for having taken up this matter, and for having continued it so strenuously and continuously for many years, until there seems almost a chance that in time people will realise that smoke is not a desirable thing in London. I am not at all sure that after a time they will not begin to think that it might possibly be removed. I had the pleasure of seeing one of our President's fires some time ago in which Coalite was burning. We took the hint, and since then we have burnt Coalite in the hope that we were doing our little best towards diminishing the smoke nuisance. I cannot say that Coalite is much pleasure to poke. I have occasionally tried to stir it, but it is always the same ; it is always alight, but it never gets any warmer for poking. At the same time I feel that in a small way we are doing our duty towards reducing the smoke of London, and following the example of our President. I think a great deal might be done with gas fires. I have had the misfortune to have the "flu," and the doctor said that a fire must be kept up all night. To keep a fire alight all night requires attention and some disturbance, whereas a gas fire in a bedroom could be kept alight without any disturbance. All doctors now agree that there is no disadvantage in a gas fire. Some years ago I had a visit from a gentleman who wanted to build a factory in Hammersmith. He said he had an excellent site, and asked me if I would put the factory up. He wanted to have a big chimney at the end of the site, and he asked if I thought anyone would be likely to have an objection. "Who lives about there?" I asked. "At the end of the site there is a place called Beavor Lodge," he replied, "and I believe a well-known artist lives there. Do you think he would object to a chimney?" I said, "I feel sure that he would, and if you take my advice you will take your factory somewhere else." He was rather annoyed ;

I lost the commission, and Sir William Richmond lost a chimney at the end of his garden ! When I was a young man I used to go very often to the Church of St. James the Less in Westminster, at that time, and I daresay still, considered one of the finest churches in London. It contained a fine fresco, by Watts, occupying the whole of the space over the chancel arch up to the roof. We all admired this enormously. Month after month, however, it seemed to get darker and darker, and after a few years' time the fresco had absolutely disappeared. A fine rich colour remained, it is true, but as to a picture there was nothing left. The two ladies who gave it were very disappointed at the result, but nobly came forward and offered to have it reproduced in mosaic, and this was carried out. In about ten years' time the mosaic was as black as the picture had been. We hear a great deal about painters and sculptors combining with architects in the decoration of buildings, but people will not decorate their buildings when they know that in a few years the decoration will become almost invisible. Sir William Richmond seems to be fortunate in having his mosaics washed every now and then, but that is a different thing. I passed one or two marble-fronted buildings as I came here this evening. Although they have not been up long, they are already getting brown and stained with smoke. I hope the Coal-smoke Abatement Society does not confine its operations to London. We know very well that Birmingham, Manchester, Sheffield, and Leeds are even worse than London. When a building is put up in any big town a thick veil soon forms over it, and, however much care is taken of the building, it is hidden and brought down to a uniform level. If we architects do not take an interest in the matter, and if our Institute does not, I should like to know how we can expect anyone else to do so. It is extraordinary that we do not take more interest in it. As to the alteration in the wording of the clause in the Act referred to by Sir William Richmond, at first I did not understand what it was that was wanted ; it seemed as though we were to say that black was white, or that black was not white. I feel sure this Institute will do what it can to stop this smoke nuisance. Since my retirement from the Presidentship I have become a person of no importance here, but I feel confident that the Council will take the matter up and, after having thoroughly gone into it, do whatever Sir William Richmond wishes. Smoke darkens our windows, degrades our houses, depresses our spirits, and will in course of time make us a miserable, commonplace people. I hope we shall all unite and back up Sir William. I am not a member of the Smoke Abatement Society, but I will become one if he will allow me. I do not know what course one has to take.

SIR WILLIAM RICHMOND : Five shillings a year subscription.

SIR ASTON WEBB : I shall pay it with pleasure.

I am sure that everyone agrees that we are greatly indebted to Sir William Richmond for bringing the matter before us. I feel that every architect should take the greatest possible interest in advancing the aims of the Society.

THE PRESIDENT: This matter, I think, is of intense interest, and one is astonished at the apathy that has been displayed on the subject. We are accustomed to dirty smoke, which is a type of the diabolical. Smoke has always been regarded in that light; but we have become accustomed to it. Sir Aston has mentioned what we may do for ourselves. I think in every house the matter should be considered, and not only in factories. Sir Aston has referred to my use of Coalite. I think that is one cure for the evil. I am told that our chimney does not want sweeping, and that the chimney-sweep could get no soot from it. I burn wood on the hearth—(not with Coalite)—and that is quite the pleasantest fire you can have. The charming blue smoke which comes from it does no harm to the atmosphere. In bedrooms and dressing-rooms gas fires are excellent. They got a bad name because many tried to use them when they had no flue. The product in that case is, of course, horrible and offensive. With gas, you can have your fire whenever you like and turn it off when you want to. It is the pleasantest fire you can have for bedrooms and dressing-rooms, and I feel that I for one contribute nothing to the foul smoke which is ruining our city and our health, and creating fogs.

The vote of thanks to Sir Wm. Richmond being put from the Chair was carried by acclamation.

SIR WILLIAM RICHMOND: It will be one of the happiest evenings of my life when I leave here and feel that our Coal-smoke Abatement Society has the blessing, and not only the blessing but the co-operation, of this most influential body. I confess that during the many years that we have been hard at work—my Committee harder than I—upon this question, going uphill against public opinion (for not only have we been abused, but I have had a number of anonymous letters of abuse, and on two occasions my life has been threatened), I have felt very sorry that my own body—the Royal Academy—has been more remiss than any other in supporting a Society which was doing everything that it possibly could to preserve the pictures painted by that body as well as by others outside it. I do not mind

in the least that they should hear this. In appealing to you I appeal to a large-hearted institution that will influence public opinion. This is not only a national question affecting England, but it affects the whole world. If I am spared the time, I hope to be in Paris at the end of this month to help to inaugurate a similar society to ours in that great city, which is becoming almost as foggy as our own. I have received a message from the Syndic of Rome asking me to draft a letter to be read at the Municipality, showing how rapidly the ancient buildings in Rome are becoming injured by the introduction of coal-smoke. Last spring when I was in Rome I took particular occasion to note the difference which had taken place during the five years that I had been, not absent from the city, but had failed to make such observations. The effect of the coal-smoke in Rome is perfectly terrible. Unless there is a very great agitation, and the Italians are inclined to act entirely in accordance with it, before very long those marvellous white antiquities will become, not indeed so bad as our own, but going in that direction. Our dear old Venice is also in a lamentable condition. I may say that five years ago when I was there, I had the honour of dining with his Majesty the King of Italy, and he asked me to write a letter to the papers upon the smoke nuisance in Venice. I did so; whether it has had any result I do not know. Last April in Cairo I saw a London fog, also up the river, owing to the sugar factories, where previously everything was bright and splendid. In Japan I am told it is the same thing; I have had letters from there asking what means can be adopted to remove it, and what I say is confirmed by a Japanese architect sitting near to me. So that this is not only an English question, but it is a question of all over the world. India is the same, I hear so on the best authority. If we are the magnificent empire we say we are, why do we not set the example? If we are the first nation in the world, and are going to have twenty *Dreadnoughts*, let us have *Dreadnoughts* which will tell the rest of the world that they are not to make smoke. Let the highest civilisation be our *Dreadnought*. Then we shall be the leading nation, not only as regards the making of guns and hammering other people's heads, but in the cause of the highest intellectual civilisation of the world—the promotion of beauty!



9 CONDUIT STREET, LONDON, W., 22nd May 1909.

COMPETITIONS.

Grimsby Town Hall Extension Competition.—Members of the Institute are requested to communicate with the Secretary before taking part in this Competition.

New Arts Building, Liverpool University.—The President has nominated Mr. E. Guy Dawber [F.] as Assessor in this Competition.

National Museum of Wales.—The three Assessors in this Competition are Sir Aston Webb, R.A. [F.], Mr. J. J. Burnet, A.R.S.A. [F.], appointed by the Directors of the Museum; and Mr. Edwin T. Hall [F.], appointed by the President of the Institute.

Cemetery at Chislehurst.—The President has nominated Mr. Ernest Newton [F.] to be Assessor in this Competition.

CHRONICLE.

The New Charter and its Objects.

The following letter, dated 10th May, has been addressed from the Institute:

To the Members of the Royal Institute of British Architects,—

We take the opportunity of drawing your attention to the new era which has opened for the Royal Institute in the recent grant by His Majesty the King of a Supplemental Charter, under which a new class of Licentiates is created.

This, it is hoped, will enable large numbers of architects to join the central body, so that it may embrace practically the whole profession, thus greatly enlarging the power and influence of the Institute.

The new Charter is the result of a policy unanimously adopted by the Institute after a thorough and exhaustive enquiry, in which the views of all sections of our members and others were elicited.

New By-laws to give effect to the Charter have been drafted with the greatest care, after thorough study and consideration, and will be considered by the general body at a Special Meeting on the 24th May. The draft By-laws were sent to all members with the JOURNAL of the 8th May.

As soon as all architects are thus practically united within the Institute, an opportunity will be afforded of considering the possibility of submitting a Bill to Parliament, which is the second part of the adopted policy.

It now remains for all to do their utmost to further the great objects we have in view, and to support the Council in completing the work so auspiciously inaugurated by His Majesty, our Patron.

ERNEST GEORGE, *President.*

EDWIN T. HALL

LEONARD STOKES

JAMES S. GIBSON

JOHN W. SIMPSON

} *Vice-Presidents.*

ALEXANDER GRAHAM, *Hon. Secretary.*

Mr. Graham's Retirement from the Hon. Secretarship.

In obedience to the resolution passed at the Annual General Meeting [Minutes, *ante*, p. 473] the following letter has been addressed to Mr. Alexander Graham, F.S.A. :—

5th May 1909.

DEAR MR. GRAHAM,—At the Annual General Meeting on Monday last a number of appreciative references were made in the speeches dealing with the Annual Report to your retirement after ten years of service as Honorary Secretary of the Royal Institute. I was directed by a resolution of the Meeting to write to you and express the sincere regret of the members at the loss of your services and their warm appreciation of the great work which you have done for the Royal Institute during your tenure of the office of Honorary Secretary.—Believe me, yours very sincerely,

IAN MACALISTER, *Secretary.*

The Annual Elections.

In the balloting papers issued last week Mr. A. MARSHALL MACKENZIE, LL.D., A.R.S.A. [F.], candidate for the Council, is erroneously described as of Aberdeen. Mr. Mackenzie has an office in Aberdeen, but most of his practice is in London, and his principal office is at 13 Waterloo Place, Pall Mall.

The Domestic Chimney and Fogs.

In view of the subject before the Institute last Monday, it is satisfactory to note that the coal-smoke nuisance in London is at present engaging the attention of the Public Control Committee of the London County Council, and they recommend the Council to seek additional legislative powers with the object of its lessening. It is not proposed at present to suggest any action in regard to the smoke from fires in private houses; but the Committee express the view that, unless public opinion brings about some radical improvement in this direction, serious attention must be given to the point. It is estimated that one-half of the smoke in London comes from this source, which at the present time does not come within the law. As

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indicating the great amount of smoke discharged from domestic chimneys, it has been noticed that some of the densest London fogs have arisen on days when the great bulk of business premises have been closed, and a bank of smoke in London has been seen to rise to a height of from three to four thousand feet, and to be carried by the wind in a sunlight-obscuring trail to a distance of fifty miles.

The Housing and Town Planning Bill.

At the meeting of the London County Council on Tuesday the following recommendations of the Parliamentary Committee were adopted :—

That amendments be sought in the Housing, Town Planning, &c., Bill, to provide—

(i.) That the local authority be afforded an opportunity of considering the modifications that may be made by the Local Government Board in a scheme under clause 2 in those cases where such modifications would impose additional liability on the local authority, and of withdrawing the scheme if it does not see its way to agree to the modifications.

(ii.) That all powers of the Local Government Board to compel the Council to carry out any of the powers or provisions of the Housing of the Working Classes Act, 1890, be deleted from clauses 10 and 11.

(iii.) That the provisions for exemption from by-laws under clause 22 (1) (2) be extended to cases under Part III. of the Housing Act 1890, and that no exemption from the operation of the London Building Acts be granted without the concurrence of the Council.

(iv.) That clause 30 providing for a quinquennial survey and register of working-class dwellings do not apply to the County of London.

(v.) That clause 36 be amended so as to provide that working-class lodging-houses shall be exempt from inhabited house duty where the charge for lodging does not exceed 1s. per day per person.

(vi.) That all expenses incurred by the Council in carrying out Part I. (Housing) of the Bill shall be charged on the general county rate and not on the special county rate.

(vii.) That all powers of the Local Government Board to compel the Council to prepare or execute a town planning scheme be deleted from the Bill.

(viii.) That any question as to whether property is injuriously affected or increased in value to be determined under clause 57 be referred to an arbitrator to be appointed by the Local Government Board.

(ix.) That clause 8 of the first schedule to the Bill be amended by the deletion of the words "but shall not, except in such cases as the Board otherwise direct, hear counsel or expert witnesses."

(x.) That such modifications in matters of detail as in the opinion of the Parliamentary Committee may be desirable in the interests of the Council be authorised.

The L.C.C. Architects' Education Department.

Some proposals for placing the L.C.C. Architects' (Education) Department under the control of the Superintending Architect have been lately under consideration at Spring Gardens. The Education Committee however have had the matter before them, and have passed the following resolutions :—

That the Education Committee are strongly of opinion that no scheme for the reorganisation of the Architects' (Education) Department will be satisfactory which does not provide for the continuance of that department as a separate department under the sole direction of one chief officer specially appointed for the purpose, and for the

amalgamation, under such officer, of the whole of the architectural work of the Council under the Education Acts.

That, in the opinion of the Education Committee, the chief officer referred to in the foregoing resolution should be a person of special experience in educational architecture, to be selected by the General Purposes Committee on the recommendation of the Education Committee, and that the commencing salary for the post should be £800 a year, rising by annual increments of £50 to £1,000 a year.

That, in the opinion of the Education Committee, in order to avoid a breach of continuity, especially with regard to schools already planned, Mr. Bailey, on his retirement, should be appointed consulting architect (Education) for a term of two years at a salary of £500 a year, in addition to his pension, with a view to superintending the execution of the plans already prepared under his supervision, and giving any advice for which he may be asked.

The Widening of Blackfriars Bridge.

The steel floor of the addition to Blackfriars Bridge has now been laid over the first and fifth spans, these being the spans which are adjacent to the banks of the river. The floor of the second span from the north end is nearly complete, and it is expected that the flooring of the remaining two spans, the third and fourth, will be finished during the present month. All the piers and main ribs have been erected. The construction of the tramway line will be begun from the north end by the contractors for that work, Messrs. Dick, Kerr & Co., about the beginning of June; and the rest of the tramway work will be carried out as quickly as progress with the steel construction of the bridge permits. The main contract, which is being executed by Sir William Arrol & Co. (Limited), stipulates that the whole undertaking is to be completed by February, but it is expected that the work, including the tramway, will be finished by the end of this year. The width of roadway will then be 73 feet, and there will be a 16-feet pavement on either side. The total width between the parapets will be 105 feet, making Blackfriars Bridge the widest bridge across the Thames. After the widening has been opened the surface of the portion of the bridge now being used will be entirely relaid.

A New York "Fireproof" Building.

What is claimed to be an absolutely fire-proof building is now in course of construction in New York, at the corner of Fourth Avenue and Seventeenth Street, from the designs of Messrs. Goldwin, Starrett, and Van Vleck. The building is to be of seventeen stories, and is intended to be used for mercantile and office purposes. The skeleton steel frame type has been adopted, the steel columns, beams, and girders being protected for all basement and outside columns in Portland cement mortar, and for all interior columns by at least three inches of hollow terra-cotta blocks laid in Portland cement mortar. The floor arches throughout are of hollow terra-cotta blocks in Portland cement mortar, extending ten inches below the soffit of the beams, and all floors cement-finished on a concrete filling. The window sashes in the court walls and party-

walls are to be of standard hollow metal type, glazed with wire plate-glass, and the windows on the street fronts to be of Kalameined-metal-covered frames and sash. The stairways are to be constructed with extra heavy cast-iron stringers and risers with sheet-iron heads. All doors leading into stairways will be of the standard type with hinges, locks, &c., approved by the New York Fire Insurance Exchange. The elevator shafts are to be of standard construction enclosed in 6-inch terra-cotta block partitions. A complete 50-percent. sprinkler equipment with all necessary apparatus will be installed, the sprinkler pipes throughout the building being concealed. An automatic fire-alarm service, a special building signal service, and the watchman's clock system in each stair-landing on every floor of the building are other features to be incorporated. The idea is to meet to the fullest extent the requirements of the New York Board of Fire Underwriters and the Fire Insurance Exchange.

A Forgotten Oriental Empire.

At the Royal Institution Professor John Garstang, Rankin Professor of Methods and Practice of Archaeology at the University of Liverpool, has delivered the first of two lectures on "The Hittites," his subject being "Monuments of Egypt and Asia Minor." At the outset of his lecture, he asked that indulgence might be accorded to the treatment of a new science dealing with an unknown people using an unknown script and language. The subject, however, was not altogether new. There were four sources of evidence—(1) the monuments and archives of the Pharaohs recounting their warfare with the Kheta and their allies in the north of Syria; (2) the references to the Hittites in the Old Testament, vague at all times, particularly in the Book of Genesis, but more readily intelligible after the settlement of the Israelites in Canaan; (3) the later records of Assyria, giving glimpses of the final overthrow of the Hatti; and (4) a series of prehistoric and unexplained monuments associated with peculiar hieroglyphic inscriptions in the north of Syria. It was in pondering upon these materials that Professor Sayce came to the natural conclusion that the unexplained monuments in question must be those of the Hittites; and, finding the same hieroglyphics even in the west of Asia Minor, was led in 1876 to his dramatic inference of a forgotten empire, an Oriental Power rivalling those of Egypt and Assyria. It was a brilliant hypothesis supported in its main features by the discovery of Hittite archives at Boghaz-Keui, in the north centre of Asia Minor, which included diplomatic correspondence with the Courts of Babylon and of Thebes.

The Servian Wall in Rome.

The Times correspondent, writing from Rome on the 12th inst., notes the united action now being taken by Roman archaeologists and artists in

defence of the historic remains of their city. The latest relic threatened is a very perfect fragment of the old Servian wall, of which so little is now left. Ascending the Via delle Finanze from the Nicola da Tolentino one is confronted by a high bluff upon which the Villa Spithöver stands. This Villa and the land behind it has been bought by the Sallustiana Building Society, who intend to level the whole area and build a number of houses on it. To improve their scheme they asked permission to continue the Via delle Finanze in a straight line, driving a new road through the present high bluff of masonry and loose earth which now blocks it, and so give a new frontage to their proposed houses. But right across that bluff, below and at the side of the villa, runs a tract of some thirty or forty yards of the old Servian wall. The preliminary work of clearing away the earth above has laid bare this remnant and disclosed its singularly perfect condition. It is of grey tufa, *cappellaccio* as it is called, like most of the Servian wall; and the stones of the outside facing, small rectilineal blocks, are perfectly dressed and lined. It is, perhaps, the most characteristic specimen of the old Servian fortification, the first walls of Rome, that is now left. In order to carry out the proposed road this would have to be destroyed. The Archaeological Committee which advises the Roman Municipality at once protested against such a scheme, and refused their consent. Other archaeological societies in Rome supported them, as did also the Academy of St. Luke and the representatives of Roman art. Professors Boni and Lanciani and many other archaeologists and artists, have strongly declared for the preservation of the wall.

THE REGISTRATION OF ARCHITECTS.

To the Editor JOURNAL R.I.B.A.—

Sir,—I notice in the remarks made by Mr. Woodward at a recent Business Meeting of the Institute, and published in the last issue of the JOURNAL R.I.B.A., that he had in practice taken exception to an auctioneer acting as a surveyor, presumably under the Building Act, in dealing with the sections appertaining to party-walls. He might, I think, have gone further and objected to either house agents or auctioneers acting as surveyors in such capacity, for it is simply astounding what these gentlemen will sometimes do. I remember one instance where a house agent gave away the whole flank wall of an independent house as a party-wall without any payment whatever from the adjoining building owner save and except the payment of his own fees, no party-wall award having been either entered into or taken up, thereby leaving no record of the transaction. A builder who was in my office this morning told me that he had for years been called

upon by house agents to pay as much as 12½ per cent. commission to house agents for work given to him, and that since the passing of the recent Act. As he naively observed, the client has to pay that amount more for the work, and then the house agent charges the client for supervising the work. I have also heard of them demanding commissions from the profession for the introduction of work, and alleging that they have been offered as much as from 30 to 50 per cent. of an architect's fees for such introductions. It is quite clear that it is time the profession took up some definite position with regard to these matters, even if the public remain in a state of obscurity concerning them.

Yours faithfully,
A FELLOW.

MINUTES. XIV.

At the Fourteenth General Meeting of the Session 1908-09, held Monday, 17th May 1909, at 8 p.m.—Present, Mr. Ernest George, President, in the Chair; 26 Fellows (including 12 members of the Council), 23 Associates (including member of the Council), 2 Hon. Associates, and several visitors:—

The Minutes of the last Meeting being before members for confirmation, the Secretary stated that the Minutes as printed in the JOURNAL [p. 475] required amendment by the insertion of the words "except as regards artistic copyright" in the 3rd line of the 4th paragraph, so as to read: "Mr. Wm. Woodward [F.], having reviewed the Report at length, the criticisms and questions raised by him and other speakers—except as regards artistic copyright—were replied to by Mr. Edwin T. Hall, Vice-President, Mr. W. H. Atkin Berry [F.], the Chairman, and the Secretary." The amendment having been agreed to, the Minutes in other respects were passed and signed as correct.

The following Associate, attending for the first time since his election, was formally admitted by the President and signed the Register—viz.: Hugh Healey.

The following candidates for membership, found by the Council to be eligible and qualified according to the Charter and By-laws, were nominated for election—viz.: As FELLOWS (6): Arthur Thomas Bolton [A. 1888, *Sooane Medallist* 1893, *Institute Medallist (Essays)* 1895]; Frederick Darc Clapham [A. 1901]; Henry Arthur Crouch [A. 1893, *Title Prizeman* 1896]; John Stanley Heath [A. 1900]; Edward Skinner [A. 1898] (Colombo); Percy Leslie Waterhouse, M.A. Cantab. [A. 1893]. As ASSOCIATES (4): Donald Macpherson Gordon [*Colonial Examination*, Montreal, Canada]; James Charles Morrell [*Colonial Examination* 1908], Melbourne; Harold Beckwith Richards [*Probationer* 1903, *Student* 1904, *Qualified* 1908], Detroit, Mich., U.S.A.; William Arthur Rigg [*Probationer* 1903, *Student* 1906, *Qualified* 1908].

A Paper by Sir Wm. Richmond, K.C.B., R.A., D.C.L. [H.A.], on SMOKE ABATEMENT having been read by the author and discussed by Dr. Des Vaux, Hon. Treasurer of the Coal Smoke Abatement Society, Mr. Paul Waterhouse, M.A. Oxon. [F.], Sir Aston Webb, R.A. [F.], and the President, a vote of thanks was passed to the author by acclamation.

The President having reminded members of the Special General Meeting summoned for Monday 24th May for the consideration of the Council's proposals for the revision of the By-laws under the new Supplemental Charter, the proceedings closed and the Meeting separated at 9.30.

REVIEWS.

MARBLE.

Marble and Marble Working. By W. G. Renwick. With numerous illustrations and coloured plates. 8o. Lond. 1909. [Crosby Lockwood & Son, 7 Stationers' Hall Court.]

On this subject Mr. Renwick has written a fascinating book, having gathered information of various sorts, from different sources far and wide, on marble rocks and their geological history, on quarrying and working, and on the application of the finished materials to the building and beautifying of architecture, and to a variety of other useful purposes, scientific and domestic. In addition, a chapter is devoted to marble imitations of various kinds. The work is profusely illustrated with printed photographs of quarries and machinery, many of which are of interest. There are also colour prints of polished marble specimens, which, if of little instructive value, give cheerful interest to the book.

Much of the information given will be found interesting to architects, and may be of some practical use to marble workers and others connected with building. The contents of the book are not well arranged, and there is too much repetition of the same information under different headings. The general index is very incomplete, and it is difficult to find what one wants. The book as a work of reference would be improved by a complete bibliography of existing works on the subject. These are numerous, commencing with the classics and coming down to the present time. As regards materials and methods of marble-working, some of the early books, especially the Latin, Italian, and French, are instructive, and show the practical knowledge the old past men possessed. As regards rocks used as marbles, the ablest geologists of the past as well as those of the present day have given us the results of their researches in a simple, readable manner. The latest useful work on the subject is the Catalogue of the Mineral Collections of the British Museum, by Mr. L. Fletcher, F.R.S., recently issued by the Trustees at the price of a shilling.

The author gives chapters on quarries, ancient and modern, with methods of working in various countries. The information with illustrated examples is well "up to date," being explanatory and useful; it is doubtful, however, if some of the new American methods can be adapted to Britain, though they may be of service in Belgium and Italy. The skill displayed by the Carrara quarrymen and their ability in moving masses in their mountain quarries are not likely to be surpassed, at least for some time to come.

Mr. Renwick has much to say on marble as building material, showing the superior value of Greek pentelikon over other marbles for London building purposes. In all the information he gives about pentelikon marble, however, he omits to tell us about

the marble deposits from which the London supply has come the last ten years or so. These white deposits extend over a large tract of country, and, like Carrara, the marble varies in quality from good to bad, almost in every quarry, both as regards purity of colour and compactness of crystallisation and also as to size of blocks obtainable. The classic structures of Athens and the new Government buildings were erected with marble obtained from the south face of the mountain, whereas the marble recently imported has been extracted from the north face, and the bulk of very large blocks from the base of an opposite mountain on the north. These later quarries produce blocks almost any size, and being alongside the railway are conveniently placed for transit. The author remarks that this marble is "non-absorbent." This is incorrect. The discolouration in all probability will turn out to be caused by the impurities of the London atmosphere, although he remarks later, "It is practically impervious to atmospheric impurities." Nothing, however, is likely to happen that will impair the durability of the material. For important works careful selection is requisite, as in the case of the doorway at Cornhill alluded to by the author as weathering well after ten years' exposure.

In the chapter devoted to British and colonial marbles those referring to India are the most important, the white of "Makrana" being excellent. It is a pity these ancient quarries are not worked on such business lines as the American methods illustrated, which would seem equally applicable to them. The blue-purple colour plate given of Canadian sodalite is interesting as a decorative stone, but hitherto its decorative value has mostly been misapplied.

Devonshire marbles are fairly described, but the famous Ipplepen quarries, which produced the fine monolith columns on the staircase of the Royal Academy, and a number of similar size used at the National Provincial Bank, Threadneedle Street, are barely noticed; nor the Green Devon used at the Brompton Oratory.

The Derbyshire Hopton Wood stone the author calls a marble; this is confusing. Hopton Wood is a good fine greyish white carboniferous limestone suitable for interior work, but not for out of doors where rain can get at it. The author's reference to the Gordon Pedestal as weathering well is inexact; as a matter of fact it is not weathering well, except the projecting cornice, which is protected by a lead covering. The stone wears precisely the same as Portland; the fossils standing up show the original surface, the softer parts become rain-washed-out. It does not weather better than carefully selected Portland stone, if as well.

More might have been said about Derbyshire and Staffordshire alabaster, a very useful material that has been in continuous demand for sculpture and interior decoration since mediæval times.

No mention seems to be made of the old marble

industry carried on at Ashford, near Bakewell, established a century ago to work up Derbyshire marbles by water power; nor of the mosaic workers of Matlock and Buxton, where the unique Blue-John Spa and rare Derbyshire marbles were so skilfully worked up, encouraged by Gell of Hopton, the famous Italian traveller.

The chapter on marble-working machinery is practically exhaustive and useful for reference, as showing modern methods, but experience proves that they are not all an economic success for general work where there is little repetition. At the last Paris International Exhibition there were shown fascinating machines of all sorts, but most of them were soon abandoned. English marble machinery has usually been built too heavy or too light; one shakes itself to pieces, the other vibrates too much for producing true work. The Italians are now making the best of machinery, equal in quality to that of the Belgians, and although Italian labour is cheap they use all sorts of labour-saving machines.

The method described of fixing polished marble slabs on wall faces with $\frac{1}{2}$ -inch wire cramps is certainly very poor. Flat gun-metal cramps properly designed must be better. At Aix-la-Chapelle the Cathedral interior has been recently marbled all over with slabs which stand clear of the wall, being fixed with bronze studs which honestly show, like the fixings of the old porphyry slabs in Westminster Abbey. Newly built wet walls are difficult to contend with; they ought to be backed with some sort of coating, damp-resisting.

Little need be said about artificial marbles, although for some reason the author has devoted a chapter to them. These imitations have been brought out at frequent intervals during the last fifty years, some of them being clever and promising, but hitherto they have proved mostly failures, only lasting until the promotion money has been exhausted. Scores of the specifications have been patented: these with the foreign ones can be seen at our Patent Office.

A list of marbles in ordinary use is given as a supplement, and others are mixed up in different parts of the book. These are very incomplete and the descriptions are not always correct.

There is no mention of an excellent Italian white marble quarried by Henraux of Serravezza. This marble has a slightly bluish tinge and breaks with a conchoidal fracture: it is nearly all taken by the French sculptors in Paris. Istrian stone or marble, of which Venice is built, also appears to be overlooked. This is perhaps the finest, light-coloured stone known, and it is obtainable in blocks of large dimensions. It varies much in quality and colour in different quarries.

The cleansing of marble when dirty is often done by incompetent workmen, who deliberately wash it down with hydrochloric acid. This takes off the face of the marble, which is ruinous to the material.

The author gives much enlightening information, showing in a comparative way the "go-ahead" advance made by America and other countries compared with England. Japan has all sorts of good marbles, statuary and coloured, and they are manufacturing with Belgian machinery. The time may come when they may be serious competitors to our western countries.

Mr. Renwick's book will certainly be found a valuable addition to our present published knowledge of marble and marble working, but readers will form their own opinions as to whether there is, or is not, occasionally in the text a sort of masked advertisement in favour of selected quarry proprietors and manufacturers whose actual advertisements appear bound up with the book, while old-established firms of the highest repute, British and foreign, are omitted. If this view is correct it must lower the standard of the work as a book of reference on the subject.

W.M. BRINDLEY.

ITALIAN GARDENS.

The Art of Garden Design in Italy. By H. Inigo Triggs [A.], Godwin Bursar 1906. Illustrated by 73 photographic plates reproduced in collotype, 27 plans, and numerous sketches in the text taken from original surveys and plans specially made by the authors, and 28 plates from photographs by Mrs. Aubrey Le Blond. Fol. Lond. 1906. [Messrs. Longmans, Green & Co., 39 Paternoster Row.]

The niche that this work is designed to fill is to group together for purposes of instruction the plan and certain topographical views (not the most artistic pictures) of the characteristic Italian gardens in order to elucidate the plans. This is a sound method when educational purposes are to be served. A plan of itself is an indeterminate way of conveying an idea of a garden, and pictures, even photographs, are oftentimes misleading when compared with the actual on the spot, although they may be pleasing as pictures; but a plan accompanied by photographs specially selected to illustrate it, we can to some extent piece together and make concrete, whether we have seen the actual or not. If otherwise, we have a picture book served up with a few racy chatty comments; and thus, when pleasure and amusement are the object, a different selection of views may be made. There are being produced to-day many books of photographs and coloured views of the Italian gardens, some fairly true, and others true enough to satisfy a realist or a person who sees only the outer facts of nature, yet utterly devoid of and failing even to convey suggestions of the passionate and poetic sublimity of these classical demesnes of romance and witchery. To feel the immensity and the mystery of these ancient palaces and gardens they must be seen, and then it is possible to warm up the imagination and read into such a photograph as the view towards the Casino Villa D'Este (plate

114) and the views of the Borghese the feeling of sunlight in play and eerie grandeur which anyone with the poetic response can only feel in their presence. It is doubtful whether the sombre trained vision of the English artist is capable of doing justice to the magic of the Italian gardens, and we are less capable of doing justice to their design. If they baffle the artist and designer they also elude description. On page 47 is a short attempt by Shelley to describe the precipitous gardens of the Villa D'Este which does strike a note or two of response. "The scene," he says, "from the colonnade is at once the most extraordinary, and the most lovely that eye ever beheld. On one side is the mountain, and immediately over you are clusters of cypress trees of an astonishing height that seem to pierce the sky. Above you, from among the clouds as it were, descends a waterfall of immense size, broken by the woody rocks into a thousand channels to the lake. On the other side is seen the blue extent of the lake and the mountains, speckled with sails and spires. The terraces, which overlook the lake under the shade of such immense laurel trees as deserve the epithet of Pythian, are most delightful."

The certainty and ease of the classic in its own clime is always lacking in our home attempts; the disparity with our own landscapes is always apparent. Even from a Trentham palace with all its ample and lavish theatre of a garden we turn away, saying, "No, these ancestral ghosts won't do here." The first great lesson to learn from the Italian gardens is their perfect suitability to the heroic landscapes which are their setting, and that they fittingly express the stirring traditions of the historical ground which they cover. This cannot be effected without seeing them and studying them on the spot. The same note of fitness may be claimed for the characteristic French gardens, but there are some people who are for ever upbraiding the Frenchman because he is not Italian, and the English likewise because his homely note is not French or Italian. What one likes to feel about a house or a garden is that it is the right thing for the right place, and for every site there is the one appropriate house and the one garden to accord with it.

There is, however, much to be gleaned in architectural garden designs by those who stay at home in the way of proportion, and of their details in the shape of measured drawings. There are not as many of these in the book as we could wish—measured drawings, for instance, of the rest-house, fountains, &c., whereby their proportions may be determined; but considering its already ponderous magnitude it would seem invidious to suggest more; although, in passing, it might be said that many of the photographs which occupy a whole page at present could conveniently be cut down to a half or quarter page. Each of the characteristic gardens would need a monograph to itself to do justice to the detail and

proportions of the features of adornment, or at least to convey to the student a sense of their proportions and detail, not for him to slavishly copy them should he ever get the opportunity of doing things on the heroic scale, which I doubt if he ever will. This work, which has doubtless entailed much labour and research, will be specially helpful to anyone who has seen the gardens, and to those who are daily experiencing the hundreds of difficulties which are constantly occurring; but I doubt whether it will serve such a lasting purpose as the author's former excellent work dealing with the Gardens of England and Scotland.

THOMAS H. MAWSON [H.A.].

THE TOWN-PLANNING BILL.

The Sociological Society, whose mission, under the presidency of Lord Avebury, is to promote investigation and advance education in social science, has been moved by the Bill now before Parliament to take up the subject of Town-Planning. The question was referred to the Cities Committee of the Society, and after a long and painstaking inquiry the Committee have drawn up the following Report:—

I.

We welcome and highly appreciate this Town-Planning Bill, and we early decided that it was not necessary for this Committee to enter into its discussion in detail, or that of its proposed amendments. We have addressed ourselves essentially to the problem of Town-Planning itself, as raised by the study of particular types of towns and districts involved; and to the nature and method of the Preliminary Inquiry which we are unanimously of opinion is necessary before the preparation of any Town-Planning Scheme can be satisfactorily undertaken. We have reason, however, to fear that schemes are in incubation, alike by municipal officials, by public utility associations, and by private individuals, expert or otherwise, which, whatever their particular merits, are not based upon any sufficient surveys of the past development and present conditions of their towns, nor upon adequate knowledge of good and bad town-planning elsewhere. In such cases the natural order, that of Town Survey before Town-Planning, is being reversed; and in this way individuals and public bodies are in danger of committing themselves to plans which would have been widely different with fuller knowledge, yet which, once produced, it will be difficult to modify.

We have therefore, since February last, addressed ourselves to the initiation of a number of representative and typical City Surveys, leading towards Civic Exhibitions, and these increasingly

under municipal auspices in conjunction with Public Museums and Libraries, and with the co-operation of leading citizens representative of different interests and points of view. In Leicester and Richmond, Woolwich and Chelsea, Dundee and Edinburgh substantial progress has been already made, and with moderate outlay and clerical assistance it is now possible rapidly to promote and assist such surveys in many other towns and cities. Our experience already shows that in this inspiring task of surveying, usually for the first time, the whole situation and life of a community in past and present, and of thus preparing for the planning scheme which is to forecast, indeed largely decide, its material future, we have the beginnings of a new movement—one already characterised by an arousal of civic feeling, and a corresponding awakening of more enlightened and more generous citizenship.

II.—SUGGESTED AMENDMENTS TO BILL, THIRD SCHEDULE.

We trust that the enactment of a Preliminary Public Inquiry previous to the preparation of a Town-Planning Scheme is actually within the spirit and purpose of the Bill. Yet even if so, its precise wording as it stands does not make this sufficiently clear to municipalities and others interested; they are hence in danger of taking the very opposite course, that of Planning before Survey. Our suggestions towards amendments guarding against this are, however, of the very simplest kind, viz.:—

Page 29. THIRD SCHEDULE.

§1. Insert (a) *Preliminary Local Inquiry—to include the collection and public exhibition of materials illustrative of Situation, Communications, Industry and Commerce, Population, Town Conditions and Requirements, etc.*

§4. Line 19. After *affected*, insert *and bodies or societies interested*.

III.—REASONS FOR EMENDATIONS AS ABOVE.

As the Bill at present stands, without the above amendment, a Town Council, or its Streets and Buildings Committee, may simply remit to its City Architect, if it has one, more usually to its Borough Surveyor or Engineer, to draw up the Town-Planning Scheme.

This will be done after a fashion. But neither these officials nor their Committees have as yet had time or opportunity to follow the Town-Planning movement even in its literature, much less to know it at first hand from the successes and blunders of other cities. Nor do they usually possess the many-sided preparation, geographic, economic, artistic, etc., which is required for this most complex of architectural problems, one implying moreover innumerable social ones.

If expert advice be moved for, the Finance Committee of the Town Council, the ratepayers also, will tend to discourage the employment of an exter-

nal architect. Moreover, with rare exceptions, even the skilled architect, however distinguished as a designer of buildings, is usually as unfamiliar with town planning as the town officials; often, if possible, more so. For they have at least laid down the existing streets; he has merely had to accept them.

No doubt, if the plan thus individually prepared be so positively bad, in whole or in part, that its defects can be seen by those not specially acquainted with the particular town or with the quarter in question, the Local Government Board can disapprove or modify. But even accepting what can be thus done at the distance of London, or even by the brief visit from a Local Government Board advisory officer, the real danger remains. Not that of streets, etc., absurdly wrong perhaps, but of the *low pass standard*—that of the mass of municipal art hitherto, despite exceptions, usually of skilled individual initiative.

Town-Planning Schemes produced under the too simple and too rapid procedure as yet possible under the wording of the Bill (without amendments as above) may thus escape rejection under the Act rather than fulfil its spirits and aims; and will thus commit their towns for a generation, or irreparably, to designs the coming generation may deplore. Some individual designs will no doubt be excellent, but there are not as yet many skilled town-planners among us. Even in Germany, still more in America (despite all recent praise, much of which is justified), this new art is still in its infancy.

As a specific example of failure to recognise and utilise all but the most obvious features and opportunities of even the most commanding sites, the most favourable situations, Edinburgh may be chosen. For despite its exceptional advantages, its admired examples of ancient and modern town-planning, its relatively awakened architects, its comparatively high municipal and public interest in town amenity, Edinburgh notoriously presents many mistakes, disasters, and even vandalisms, of which some are recent ones. If such things happen in cities which largely depend upon their attractive aspect, and whose town council and inhabitants are relatively interested and appreciative, what of towns less favourably situated, less generally aroused to architectural interest, to local vigilance and civic pride? Even, with real respect to the London County Council and the record of its individual members, past or present, it must be said that this is hardly a matter in which London can expect the provincial cities to look to her for much light and leading as a whole, while her few great and monumental improvements are naturally beyond their reach.

In short, *passable* Town-Planning Schemes may be obtained on the method permitted by the wording of the Bill; but the best *possible* can rarely be expected. From the confused growth of the recent industrial past, we tend to be as yet easily contented

with any improvement; this, however, will not long satisfy us, and still less our successors. This Bill seeks to open a new and better era, and to render possible cities which may again be beautiful: it proceeds from Housing to Town (Extension) Planning, and it thus raises inevitably before each municipality the question of Town-Planning at its best—in fact of City Development and City Design.

IV.—METHOD, AND USES OF PRELIMINARY INQUIRY.

The needed Preliminary Inquiry is thus readily outlined. It is that of a City Survey. The whole topography of the town and its extensions must be taken into account, and this more fully than in the past, by the utilisation not only of maps and plans of the usual kind, but of contour maps, and if possible even relief models. Of soil and geology, climate, rainfall, winds, etc., maps are also easily prepared.

For the development of the town in the historic past, antiquarian material can usually be collected without much difficulty. For the modern period, since the railway and industrial period have come in, it is easy to start with its map on the invaluable "Reform Bill Atlas," and compare with this its plans in successive periods up to the present.

By this study of the actual progress of town developments (which have often followed lines different from those laid down or anticipated at former periods) our present forecasts of future developments may usefully be aided and criticised.

Means of communication in past and present, and in possible future, of course need specially careful mapping.

Social Surveys of the fulness and detail of Mr. Booth's well-known map of London may not be necessary; but such broader surveys as those of Marr, in his survey of Manchester; or of Miss Walker, for Dundee, and the like, are most desirable wherever any adequate civic betterment is not to be ignored.

The preparation of this survey of the town's Past and Present may usually be successfully undertaken in association with the Town's Library and Museum, with such help as their curators can readily obtain from the Town House, from fellow-citizens acquainted with special departments, and, when desired, from the Sociological Society's Cities Committee. Experience in various cities shows that such a Civic Exhibition can readily be set in preparation, and without any serious expense.

The urgent problem is, however, to secure a similar thoroughness of preparation of the Town-Planning Scheme which is so largely to determine the future.

To this Exhibition of the City's Past and Present there needs therefore to be added a corresponding wall-space: (a) to display good examples of Town-Planning elsewhere; (b) to receive designs and suggestions towards the local Future. These may

be received from all quarters ; some, it may be, invited by the municipality, but others independently offered, and from local or other sources, both professional and lay.

In this threefold Exhibition then of their Borough or City, Past, Present, and Possible, the municipality and the public would thus have clearly before them practically the main outlines of the Inquiry needful before the preparation of the Town-Planning Scheme ; and the education of the public, and of their representatives and officials alike, may thus, and so far as yet suggested, thus only, be arranged for. Examples of town plans from other cities, especially those of kindred site or conditions, will here be of peculiarly great value, indeed are almost indispensable.

After this Exhibition, with its individual contributions, its public and journalistic discussion, its general and expert criticism, the municipal authorities and their officials and the public would be in a very different position as regards knowledge and outlook from that which they occupy at present, or can occupy if the short and easy off-hand method above criticised be left possible under the Act. The preparation of a Town-Planning Scheme, as good as our present (still limited) lights allow, can then be proceeded with. This should utilise the best suggestions on every hand, selected freely from designs submitted, and paying on ordinary architectural rates for so much as may be accepted.

As this scheme would have to be submitted to the Local Government Board, their inspector would have the benefit of this mass of material, with corresponding economy of his time and gain to his efficiency. This inspection would essentially be on the spot ; any critic who may be appointed would naturally require to do this. His suggestions and emendations could thus be more easily and fully made, and more cheerfully adopted.

The selection of the best designs would be of immense stimulus to individual knowledge and invention in this field, as to a worthy civic rivalry also.

V.—CONCLUSION.

The incipient surveys of towns and cities, above referred to, have already clearly brought out their local individuality in all respects, in situation and in spirit. No single scheme of survey can therefore be drawn up so as to be equally applicable in detail to all towns alike. Yet unity of method is necessary for clearness, indispensable for comparison ; and after the careful study of schemes prepared for particular towns and cities, your sub-committee has agreed upon a general outline, applicable to all towns, and easily elaborated in local detail. It is therefore appended, as suitable for general purposes, and primarily for that Preliminary Inquiry previous to the preparation of a Town-Planning Scheme which is the first and last recommendation of this Committee.

APPENDIX.

OUTLINE SCHEME OF PRELIMINARY INQUIRY AND SURVEY.

The Preliminary Inquiry necessary for the adequate Preparation of a Town-Planning Scheme involves the collection of detailed information upon the heads given below. Such information should be as far as possible in graphic form, *i.e.* expressed in maps and plans illustrated by drawings, photographs, engravings, etc., with statistical summaries, and with the necessary descriptive text ; and thus be suitable for Exhibitions in Town House, Museum or Library.

The following General Outline of the main headings of such an Inquiry admits of adaptation and extension to the individuality and special conditions of each town and city. The preparation of more detailed schemes of survey is already well advanced : *e.g.* for Leicester, Woolwich, Richmond, Chelsea, Dundee, Edinburgh, etc., and the Committee is prepared to assist with others.

SITUATION, TOPOGRAPHY AND NATURAL ADVANTAGES :—

- (a) Geology, Climate, Water Supply, etc.
- (b) Soils, with Vegetation, Animal Life, etc.
- (c) River or Sea Fisheries.
- (d) Access to Nature (Sea Coast, etc., etc.).

MEANS OF COMMUNICATION, LAND AND WATER :—

- (a) Natural and Historic.
- (b) Present State.
- (c) Anticipated Developments.

INDUSTRIES, MANUFACTURES AND COMMERCE :—

- (a) Native Industries.
- (b) Manufactures.
- (c) Commerce, etc.
- (d) Anticipated Developments.

POPULATION :—

- (a) Movement.
- (b) Occupations.
- (c) Health.
- (d) Density.
- (e) Distribution of Well-Being (Family Conditions, etc.).
- (f) Education and Culture Agencies.
- (g) Anticipated Requirements.

TOWN CONDITIONS :—

- (a) Historical : Material Survivals and Associations, etc.
- (b) Recent : Particularly since 1832 Survey, thus indicating areas, lines of growth and expansion, and local changes under modern conditions, *e.g.* of streets, open spaces, amenity, etc.
- (c) Present : Existing Town Plans, in general and detail, Streets and Boulevards, Open Spaces, Parks, etc. Internal Communications, etc. Water, Drainage, Lighting, Electricity, etc. Housing and Sanitation (of localities in detail).

LOCAL GOVERNMENT AREAS (MUNICIPAL, PAROCHIAL, ETC.)

TOWN-PLANNING, SUGGESTIONS AND DESIGNS :—

- (a) Examples from other Towns and Cities, British and Foreign.
- (b) Contributions and Suggestions towards Town-Planning Scheme, as regards :—
 - (a) Areas.
 - (b) Possibilities of Town Expansion.
 - (c) Treatment in detail (alternatives when possible).

THE TEMPLES OF PÆSTUM.

By FREDK. R. HORNIS [A.], *Godwin Bursar* 1905.

FIG. 1.—PÆSTUM : TEMPLE OF NEPTUNE.

They stand between the mountains and the sea ;
Awful memorials, but of whom we know not !
The seaman, passing, gazes from the deck,
The buffalo-driver, in his shaggy cloak,
Points to the work of magic and moves on.
Time was they stood along the crowded street,
Temples of Gods ! and on their ample steps
What various habits, various tongues beset
The brazen gates for prayer and sacrifice !
Time was perhaps the third was sought for Justice ;
And here the accuser stood, and there the accused ;
And here the judges sat, and heard, and judged.
All silent now ! as in the ages past,
Trodden under foot and mingled, dust with dust.

ROGERS.

ONE is reminded of this fine description in approaching the solemn and deserted city of Pæstum. These mighty ruins, standing by the edge of the Tyrrhenian Sea, bounded inland by a mountain chain, isolated almost from the habitations of man, and retaining so much beauty in their ruin, both in themselves and in the enchantment of their situation, produce an awe-inspiring effect upon the mind. They appear in almost utter loneliness,

and but few travellers even seem to visit them, notwithstanding that the railway from Naples now directly passes Pæstum. The distance from the former place is about sixty miles in a southern direction, passing by Pompeii and Salerno. The temples appear to be under the charge of the Italian Government.

What makes the Pæstum remains of importance in architectural history is that they include, in the Temple of Neptune, what is probably one of the earliest specimens of Grecian architecture extant, representing the beginnings of that Doric Order which eventually reached its culmination and perfection in the Parthenon at Athens. This temple with the two others—or, as more generally regarded, one other and a basilica—form possibly one of the most interesting and impressive groups of Grecian architecture in existence. Indeed, according to Gwilt,* "some have thought that the temples of Pæstum exhibit more severe simplicity and perfe-

* See *Elements of Architectural Criticism*.

tion of design than the edifices of Athens, and that the former are in a more correct and classical style. Lusieri was of this opinion, and considered that 'in those buildings the Doric Order attained a pre-eminence beyond which it never passed; not a stone has been placed there without some evident and important design; every part of the structure bespeaks its own essential utility.'

The origin of this ancient colony still appears to be somewhat obscure. According to Mazzochi,* "Paestum was founded by a colony of Dorenses, or Dorians, from Dora, a city of Phoenicia, the parent of that race and name, whether established in Greece or in Italy. It was first called Posetan, or Postan, which in Phoenician signifies Neptune, to whom it was dedicated. It was afterwards invaded and its primitive inhabitants expelled by the Sybarites. This event is supposed to have taken place about 500 years[†] before the Christian era. Under its new masters Paestum assumed the Greek appellation Posidonia, of the same import as its Phoenician name, became a place of great opulence and magnitude, and is supposed to have extended from the present ruin southward to the hill, on which stands (or stood) the little town called from its ancient destination Acropoli. The Lucanians afterwards expelled the Sybarites[‡] and checked the prosperity of Posidonia,



FIG. 2.—GENERAL VIEW.

which was in its turn deserted and left to moulder away imperceptibly. The original city then recovered its first name, and not long after was taken and at length colonised by the Romans."[§] This was probably about 280 before the Christian era, and it would

be at this period that the city received the name by

The buildings of Magna Graecia are considered to take the following chronological order—Syracuse, Paestum, Selinus, Segesta, and Agrigentum.

The ruins of this one-time flourishing colony, the foundations of which quite possibly date from the seventh century before Christ, consist of the city walls and gates, three temples, remains of a

which it has since been generally known. The Saracens, crossing from Sicily, appear to have destroyed Paestum at the beginning of the tenth century, driving its inhabitants into the neighbouring hills, its destruction being completed by Robert Guiscard, who, in 1080, stripped some of its buildings of columns to decorate the church he had founded at Salerno—where they may still be seen—since which time the city has remained abandoned and more or less forgotten.

So much for what little appears to be known of the general history of the colony. As to the period in which took place the construction of its still existing monuments, Wilkins considers that "we ought to date the construction of the great temple during the time in which the city remained under the dominion of the settlement from Sybaris," and the Sybarite Greek origin seems to be the one most generally adopted. The



FIG. 3.—PORTA DELLA SIRENE.



FIG. 4.—PAESTUM : EAST TOWER.

* See Eustace's *Classical Tour*, 1802.

[†] Other authorities say 550 B.C.

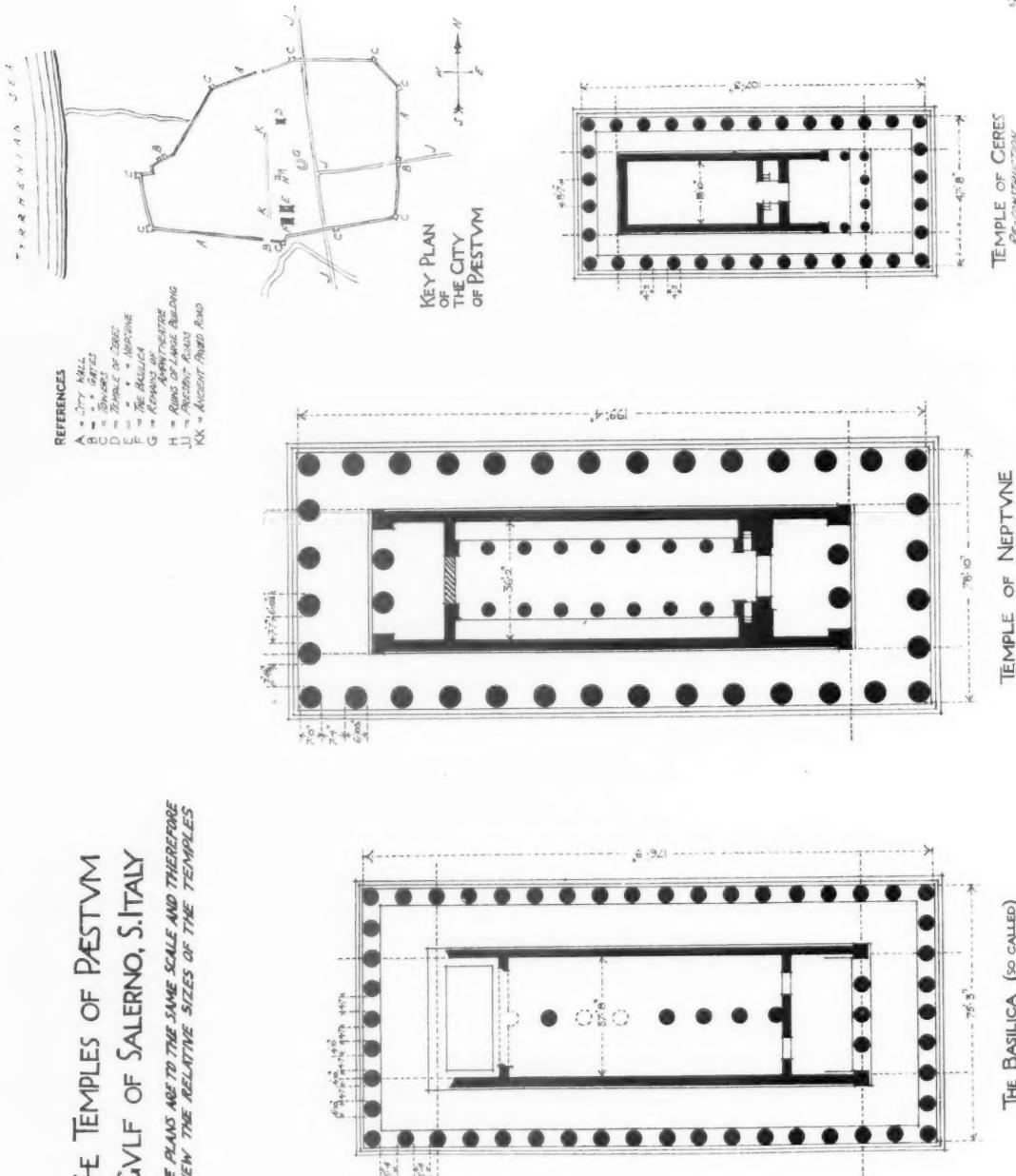
[‡] About 350 years B.C. Wilkins's *Vitruvius*.

THE TEMPLES OF PESTVM GVLF OF SALERNO, S. ITALY

N.B.—THE PLANS ARE TO THE SAME SCALE AND THEREFORE
SHOW THE RELATIVE SIZES OF THE TEMPLES

REFERENCES

- A = CITY WALL
- B = " " GATES
- C = TOWER OR CASTLE
- D = " " OF THE BURG
- E = THE BURG
- F = THE RESIDENCE
- G = REMAINS OF AN APPARATEUM
- H = RUINS OF LARGIS BUILDING
- J = ANCIENT PHAROS ROAD
- KK = ANCIENT PHAROS ROAD



theatre, an amphitheatre, some tombs, and towers round the boundary walls. The enclosing walls of the city, built of travertine stone, take a somewhat pentagonal shape, as shown on the key plan, and are stated to be about three English miles in circumference, about five metres in width or thickness, and to have reached at some points a height of 15 metres. The bulk of the walling is at present much lower than this, so that one crosses it in many parts without difficulty. There are four gateways, one facing each point of the compass, that on the east, the opposite side to the sea, being the Porta della Sirene, the best preserved of the four, and taking its name from a bas-relief with which it was formerly ornamented. This gateway has a semicircular arch of Roman construction, from which it may reasonably be inferred that the construction of the city walls and gates was due to that people, with a view to their making the conquest of the city more secure.

It seems not improbable that the construction of the two inferior temples was contemporary with the building of the city walls.

The ancient main street, if it coincides with that now existing, appears to have run from north to south through the town, and to have roughly divided it into two parts. The temples follow near this road, and on the west side of it, the northernmost being the Temple of Ceres, the next that of Neptune (commonly called the Great Temple), while the southernmost is known as the Basilica or Curia. An undoubtedly ancient paved road of the city runs parallel with that previously mentioned at a short distance from the western end of the temples. Excepting the temples, the other remains are in almost too ruinous condition to command detailed attention. They are of interest only as additional indications of the probable extent and importance of the public buildings of the city.

The great hexastyle temple of Neptune is the finest, as it is also the most ancient, of these buildings. The structure is peripteral-hypothal, and has six columns at the ends and fourteen at the sides. It is 78 feet 10 inches in breadth by 199 feet 4 inches in length, as compared with 100 feet by 228 feet of the Parthenon at Athens. It has two peristyles, divided by a wall to form the cella (see plan)*, the inner of which has a double order of columns—as

with the Parthenon—the uppermost of which is of very reduced height and separated from the lower by an architrave only, the frieze and cornice being



FIG. 6.—PÆSTUM : TEMPLE OF NEPTUNE.

omitted. The purpose of the double story would appear to have been to give support to the roof which covered the lateral peristyles, the centre



FIG. 7.—PÆSTUM : INTERIOR OF PERISTYLE, TEMPLE OF NEPTUNE.

division having apparently been open. The "cella" had a portico and entrance, probably at each end,

* The plans here given are based on those given—with restorations—in the recently published and excellent work *Die Griechischen Tempel in Unteritalien und Sicilien*, by Robert Koldewey and Otto Puchstein.

formed of two pillars and antæ, and the staircases indicated on the plan in the main cross wall appear to have given access to the roof and possibly some apartments over the vestibule. A noticeable peculiarity is the way in which the floor of the "cella" is raised above that of the rest of the temple,

2 inches and the apex of the pediment is 12 feet above the horizontal cornice. The three-step stylobate of the temple is rather more than four feet in total height.

The columns of the outer peristyle have twenty-four flutes, in which respect they appear to be unique as concerns this order. This increase in the number of flutings, from that usually employed, probably resulted from the application of an ancient rule of the Egyptians that the shorter the proportion of a column the more numerous should be its flutings. The usual practice of the Greeks is here seen in the spacing of the columns at the angles of the building more closely in order that the triglyphs might occur at the angle of the zophorus and the metopes still be of equal width.

The lower columns of the inner peristyle have twenty flutings, and are 19 feet 9 inches

high and 4 feet 8 inches in diameter; the upper range have sixteen flutes, and as regards their diameter are practically the raking line of the lower columns continued up—a rather interesting point to notice.

The stone of which this temple is constructed is very porous and rough in texture, but of a rich golden brown colour, which has an extraordinary and beautiful effect in a blazing sunlight and seen against the deep blue of the sky and sea. It would appear to be "a stalactite, formed by a calcareous deposit of water, of the same nature as the travertine with which St. Peter's and many of the modern buildings at Rome are constructed," and was most likely procured from the mountain Alburnus, east of the city. It is considered probable, however, that the stone was originally covered with plaster and coloured—evidences to indicate which have been found and even yet exist—and the character of the stone alone is sufficient to make the suggestion a reasonable one.

A French writer* has suggested a probability that this temple was at one time submerged in the sea, to support which theory he notes that the stonework of the building is visibly eaten away by the action of the corrosive salts of the water up to a level of two-thirds the height of the column shafts. He considers it possible that the same subterranean convulsion which caused the great eruption of Vesuvius in the year 79, and buried four towns, caused the city of Pæstum to sink, half submerged, beneath the sea, to be later restored to its original level, as occurred with the ancient town of Puzzuolo. The idea is not an impossible one, though to the



FIG. 8.—PÆSTUM : BASILICA AND TEMPLE OF NEPTUNE, FROM THE SOUTH-EAST.

amounting to nearly five feet, with two huge main steps in the position in which the side walls of the "cella" occurred (see fig. 7).*

The columns of the exterior peristyle are about 6 feet 10½ inches† in diameter and their total height 29 feet 11 inches, which gives them a proportion of about 4:33 diameters, or four diameters and a third. The diminution of the upper diameter of the columns is by rather more than one-fourth of the lower diameter. The diameter of the angle columns was increased by about a fiftieth part, according to the Vitruvian rule. The intercolumniation is about one diameter—as will be found to be the case with



FIG. 9.—PÆSTUM : THE BASILICA.

the other two temples—an unusually close spacing even for the Doric Order.

The average height of the entablature is 12 feet

* Photographs Nos. 6, 7, and 11 I owe to the kindness of my friend Mr. R. J. Pitcher, Mus. Bac. Dunelm., who accompanied me to Pæstum.—F. R. H.

† The measurements of the temples and various other particulars quoted are from Wilkins's *Magna Græcia*.

* See Lesueur's *L'Architecture*.

ordinary observer there are now no obvious traces of such a catastrophe. Nevertheless the marshy land and malarial atmosphere which affect the dis-

also raised conjectures as to the use of the building, and caused it to be regarded by some as having had a civil rather than a religious purpose. Wilkins, however, considered the building to have been a temple dedicated to two divinities (one to each aisle), which, he says, was not unusual with the Romans, under whose rule, as we have seen, this temple was probably built. Other authorities, too, take this view, and it seems, on the whole, quite the most likely explanation. It may be regarded as a departure from Greek practice, due to the vitiated taste of the period.

The columns of the outer peristyle are about 4 feet 10 inches and 3 feet 2 inches in lower and upper diameters respectively and 21 feet in height, and have twenty flutes. Their capitals are most peculiar in form, both as to the ovoli and necking. "The ante of the pronaos, contrary to the uniform practice of the

Greeks, diminish in the same manner as the columns, and are crowned with a projecting cap of singular form." There is no complete portion of the entablature or suggestion of a pediment existing, as may be seen by reference to the photographs.

We now come to the Temple of Ceres, some dis-

FIG. 10.—PÆSTUM : INTERIOR OF THE BASILICA, LOOKING TOWARDS TEMPLE OF NEPTUNE.

trict may give some support to a theory of subterranean convulsion, and serve to explain the early and apparently complete abandonment of the city of Pæstum. In this connection, however, it should be said that the cause of the prevalent and dangerous malaria affecting the district is more commonly attributed to interruptions in the natural courses of the numerous local rivers, causing them to overflow the plains; the unwholesome vapours arise from the stagnant pools so formed.

We come now to the second of the temples, to the south of the great temple—the so-called Basilica. This is pseudo-dipteral, with nine columns at the ends and eighteen at the sides, and in extreme dimensions it is about 176 feet 9 inches long by 75 feet 3 inches in breadth. The central column of the fronts is probably unique in Grecian Doric temples, as also the range of columns down the centre of the cella, dividing it equally in two, and the three columns between the ante of the pronaos, all of which result from and fall naturally into line with this remarkable spacing. The central range of columns was possibly merely a somewhat clumsy expedient to provide support for the roof; but it has

tance north of the great temple—the third and smallest of this group of buildings. This, like the Temple of Theseus at Athens, is hexastyle—



FIG. 11.—PÆSTUM : TEMPLE OF CERES.

peripteral, having six columns in the fronts and thirteen at the sides, counting those at the angles. The extreme length of the building is 107 feet 3 inches and its breadth 47 feet 8 inches, from which dimensions and a glance at the plans it will be seen how small this building is relatively to the two other temples. It is also in the most ruinous condition, and is, for that reason, the most obscure as to plan and arrangement, there being so little walling remaining. It is curious to note in all these temples how much better the columns have withstood destruction than the more solid walls—contrary to what one would expect to be the case. The temple seems, however, to have had an open vestibule and a cella. Instead of the walls of the cella being continued to form the sides of the pronaos, the latter is formed as a portico, open at the sides, or partially so, as well as the front; in fact, a Roman rather than a Grecian arrangement. There being no evidences of any approach to this temple from the western end, it is represented as closed on the restored plan.

The columns of the peristyle are 4 feet 3 inches in diameter and 20 feet 4 inches high, and they have twenty flutes. They are raised on a three-step stylobate, 3 feet 9 inches in height. The outline of the columns and the form of the capitals are generally similar to those of the Basilica, and exhibit the same evidences of decadence. Of the form of the entablature, which was 8 feet 2 inches in height, but little trace remains through the sealing or decay of the stone; but existing fragments show that the cornice was designed without mutules, while the grooves in the stonework of the frieze, which originally contained the triglyphs, show that the latter were set out on the Roman arrangement, with a half metope at the angle. Interesting and picturesque as this temple is, it plainly shows how far the taste of its designers had declined from the standard set by the Temple of Neptune.

The colour of the Temple of Ceres and the Basilica is greyer and distinctly less beautiful than that of the Great Temple, the stone having probably been obtained from another quarry.

Among the ruins have been found broken portions of cornices, sculptured metopes, triglyphs, and column shafts appertaining to the Doric Order, and in various places fallen heaps of other buildings, including what was possibly a circus, with carved remains of Corinthian pilasters. If excavations were made over the site by some responsible authority it is quite possible that very interesting results would be obtained.

Paintings taken from the tombs and other relics are deposited in the Museum at Naples.

Even with such cursory examination as one is

able to make in a hasty visit the beauties of these ancient monuments are forcibly impressed upon the mind. Beautiful in proportion and colour, these temples gain also in effect by the impression of solitude produced by their situation and the associations of the chequered and melancholy history of the colony. We see here the Doric Order in all its simple majesty, lacking perhaps the grace, refinement, and finish of Athenian work; but nevertheless showing the characteristics of solidity, strength, and power in a manner which is perhaps of its kind unrivalled. For as Joseph Forsyth—whose discriminating taste and classical scholarship are well known—has truly said: "Surely a Phidias working in the metropolis of Grecian art, with its two best architects and the Pentelic quarry at his command, might well produce more elegance than contemporary or even later artists, who were confined to the ruder materials and tastes of a remote colony." The conjunction of these buildings with the sea, sky, and mountains, on the edge of an Italian bay of more than usual beauty, produce together an effect which is almost sublime. Here, too, once bloomed those roses and violets whose sweetness was so celebrated that Virgil, Propertius, Ovid, Ausonius, and Martial combined to praise them; yet even these seem to have passed away. The wild buffalo still wanders over its uncultivated but not unproductive plains, and occasionally the tinkling of ox-team bells breaks in upon the otherwise almost unbroken silence of the temples.

Neither the spoliation of marauding and warlike nations nor the destructive work of time and the elements has yet compassed the downfall of these buildings; and, shattered though they are, they look good for centuries still to come. Looking back on them one feels the contrast of their apparent indestructibility with the puny and perishable structures of more recent times. Such defiance of decay has its lesson for modern constructors.

We cannot better leave them than in the eloquent words of Forsyth: "Taking into view their immemorial antiquity, their astonishing preservation, their grandeur, their bold columnar elevation, at once massive and open; their severe simplicity of design, that simplicity in which art generally begins, and to which, after a thousand revolutions of ornament, it again returns—taking, I say, all into one view, I do not hesitate to call these the most impressive monuments that I ever beheld on earth."

N.B.—Fig. 2, while offering a good representation of the situation and general appearance of the city, is incorrect with regard to the drawing of the Basilica. A reference, however, to the plan of that temple will correct the error.—F. R. H.

